

CLAIMS

What is claimed is:

1. A fluid filter comprising:
 - a housing having an end portion with a first aperture;
 - a center portion arranged in said housing and proximate to said end portion, said center portion including a second aperture;
 - a valve assembly proximate to said center portion and including a relief valve and an anti-drain back valve, said anti-drain back valve adjacent to said first aperture for selectively blocking said first aperture, and said relief valve adjacent to said second aperture for selective blocking said second aperture; and
 - a spring applying a radial force to said relief valve biasing said relief valve towards said center portion.
2. The fluid filter according to claim 1, wherein the valve assembly is an elastomeric material.
3. The fluid filter according to claim 1, wherein the relief and anti-drain back valves are integrally formed extending continuously from a first terminal end of said relief valve to a second terminal end of said anti-drain back valve.
4. The fluid filter according to claim 1, wherein valve assembly includes an axial hole with said spring arranged at least partially in said hole.

5. The fluid filter according to claim 1, wherein said valve assembly includes a U-shaped portion defining a recess with an end of said center portion received in said recess, said recess separating said relief and anti-drain back valves.
6. The fluid filter according to claim 5, wherein said U-shaped portion seals against said end portion preventing fluid flow past said U-shaped portion between said first and second apertures.
7. The fluid filter according to claim 1, wherein said spring is generally conical with a generally circular cross-section.
8. The fluid filter according to claim 7, wherein said spring includes a hemi-elliptical cross-section.
9. The fluid filter according to claim 1, including a filter element arranged within said housing and defining a central opening, said center portion comprising a center tube arranged within said central opening, said center tube including a support capturing said spring and maintaining said spring in an axial position.
10. The fluid filter according to claim 9, wherein said support member includes an aperture and said spring includes a retainer received in said aperture.

11. The fluid filter according to claim 9, wherein said relief valve seals against an inner surface of said center tube in a closed position in response to said radial force.

12. A fluid filter valve arrangement comprising:
 - a wall having an opening;
 - an valve including a longitudinally extending annular lip forming a central hole, said lip selectively blocking said opening; and
 - a spring at least partially disposed within said hole, said spring generating a radial force on said annular lip biasing said lip towards said wall.
13. The valve arrangement according to claim 12, wherein said wall is generally cylindrical.
14. The valve arrangement according to claim 13, wherein said wall is a center tube for supporting a filter element.
15. The valve arrangement according to claim 12, wherein spring is concave with a generally circular cross-section.
16. The valve arrangement according to claim 15, wherein said spring includes a hemi-elliptical cross-section.
17. The valve arrangement according to claim 12, wherein spring includes multiple spaced apart longitudinally extending slots adjacent to said lip forming flexible fingers.

18. The valve arrangement according to claim 12, wherein said valve includes a radially inwardly extending shoulder supporting an end of said spring.
19. The valve arrangement according to claim 12, wherein said spring includes an opening for permitting fluid flow through said spring.
20. The valve arrangement according to claim 12, wherein said valve includes another annular lip extending in a direction transverse to said annular lip, said annular lips contiguous with one another.